

Si₃N₄/SiO₂ planar photonic structures fabricated by focused ion beam

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High Q resonators have shown to be an efficient approach for frequency comb generation [1–4]. The small volume and high photonic life-time are essential to promoting four-wave mixing of the resonant modes of the cavity with a single pump frequency. However, coupling light to and from the resonator is still achieved with hybrid integration using tapered fibers [5]. In this work we present the development of structures with the monolithic integration of high-Q resonators and planar wave-guides for frequency comb generation. With a combination of conventional lithography and focused ion beam processing we have achieved extremely good morphology with great design flexibility. Figure 1 shows a typical Si₃N₄/SiO₂ tapered waveguide coupled to a microdisk resonator. Linear and nonlinear optical characterization of the structures will be presented.

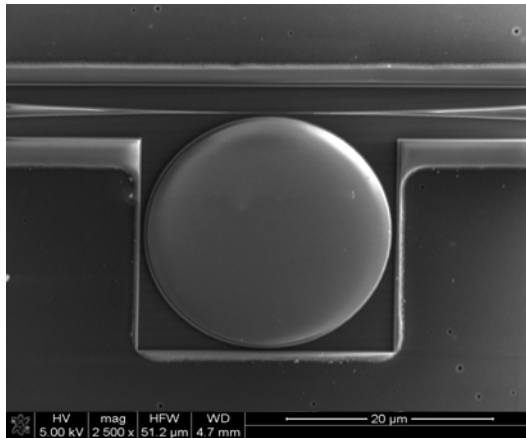


Fig. 1. Micrograph of a Si₃N₄/SiO₂ tapered waveguide coupled to microdisk resonator fabricated by focused ion beam.

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